

Pier G, Lehigh Valley Railroad
Jersey City
Hudson County
New Jersey

HAER No. NJ-27C

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PHOTOGRAPHS

HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D. C. 20240

HISTORIC AMERICAN ENGINEERING RECORD

PIER G, LEHIGH VALLEY RAILROAD

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Location: Pier G is located on the south shore of the Morris Canal Basin in Jersey City, Hudson County, New Jersey, opposite Warren Street in the Paulus Hook section of the city. It is approximately 0.7 mile due east of the intersection of Johnson Avenue and the New Jersey Turnpike Extension.

UTM: 18.580900.4506780

Quad: Jersey City

Date of Construction: 1891; subsequently modified at an unknown date, possibly 1909.

Present Owner: State of New Jersey, Division of Parks and Forestry, Department of Environmental Protection, Trenton, New Jersey 08625

Present Use: The structure was unused and vacant at the time its demolition commenced in August 1979. It was destroyed by fire before demolition was completed.

Significance: Pier G was the last multistoried covered freight pier of heavy timber construction surviving on the Hudson River waterfront in Hudson County. It was among the last remains of the Lehigh Valley Railroad's New York Harbor terminus complex.

Historian: Herbert J. Githens, Historic Conservation and Interpretation, Inc., Box 111, RD 3, Newton, New Jersey 07860; June-August 1979.

Transmitted by: Jean P. Yearby, HAER, 1984

MITIGATION PROCEDURES FOR PIER G
TIDEWATER BASIN, LEHIGH RAILROAD TERMINAL
LIBERTY STATE PARK, JERSEY CITY
HUDSON COUNTY, NEW JERSEY

by

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for

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Trenton, N.J.

and

U.S. ARMY CORPS OF ENGINEERS
New York District

MAY 1980

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I. INTRODUCTION

In compliance with the intent of Section 106 of the Historic Preservation Act of 1966, the Corp of Engineers, U.S. Department of the Army, and the Bureau of Capital Planning and Improvements, New Jersey Department of Environmental Protection, requested that the Advisory Council on Historic Preservation comment on the adverse effect/which the proposed Collection and Removal of Drift project in the vicinity of Liberty State Park would have on Pier G. This structure, scheduled for demolition, had been determined by the Secretary of the Interior to be eligible for inclusion in the National Register of Historic Places. The Advisory Council requested "a review of alternatives that would avoid any adverse effects on Pier G." The pier had been abandoned for some time, and evidence of its deterioration led the Department of Environmental Protection to hire the firm of Keast and Hood, Company, Structural Engineers in Philadelphia, to assess the pier's condition. In a report dated February 20, 1979, the consultants concluded the following:

Because of eventual high costs for repairs and replacements and the continuing uncertainties concerning the integrity of the piling, the writer [Nicholas L. Gianopulos] advises against consideration of retention of the pier for future usage.

Although Pier G was an acknowledged important cultural resource in the railroad/industrial history of Jersey City, it was decided

that the pier would be demolished after an appropriate level of recording. The following report was prepared by the research and recording team of Historic Conservation and Interpretation, Inc., in consultation with the staff of the Historic American Engineering Record (HAER), a branch of the Heritage Conservation and Recreation Service, Department of the Interior. It is intended to provide an adequate photographic representation of the pier as it existed prior to and during demolition in 1979. Detailed descriptions accompany the visual images, and historical data are given to place this significant cultural resource in its cultural context.

II. METHODOLOGY

The primary means of recording Pier G was a comprehensive set of photographs showing the pier's last condition. Because the heavy-timber structural system was of great importance historically, two photograph sessions were executed: prior to demolition and during demolition. These were accomplished in late June and late August of 1979, respectively. Photographer Michael Spozarsky captured the pier in its context of canal basin and railroad yard. Overall photographs record each of six elevations. Interior shots show the structural members before demolition and pier apparatus, such as vehicular ramps, gangway bridges, and the monitor system in the roof structure. A complete cross (transverse) section of the pier was made evident by the demolition. The series of photographs recording the transverse section were taken only two days before the pier was totally destroyed by fire.

Supporting text conveys the historical context of the pier and describes its components and ultimate significance as a cultural resource. The text is intended to support the photographic essay. Documentary research revealed that the preliminary design drawings for Pier G had been published within Walter G. Berg's book *Buildings and Structures of American Railroads*. Historical Photographs of Pier G and its twin, Pier I, which accompanied other material relating to the Morris Canal Investigative Committees of 1903 and 1912, were located in the New

Jersey State Museum in Trenton. Although undated, these photographs undoubtedly dated from the era of those committees. They show the pier in relatively brand new condition and in the same form as the structure recorded in 1979.

III. HISTORICAL OVERVIEW

A. GENERAL BACKGROUND

Pier G was a three-story covered freight pier built by the Lehigh Valley Railroad in 1891 and subsequently modified. It stood off Johnston Avenue east of the New Jersey Turnpike in Jersey City as a parallelogram-shaped pier angled 30 degrees from the bulkhead of the Morris Canal (also "Tidewater" and "Big") Basin (Figures 1 and 2). This basin is normal to the Hudson River, running east-west from the river to the point where Mill (also "Prior's" and "Harsimus") Creek formerly flowed into the Communipaw Bay. In the eighteenth-century settlement period, Communipaw Bay was actually a shallow mudflat noted for its oysters and ferry, which ran from the Dutch settlement at Communipaw (now Jersey City) to Manhattan. Filling operations by the various railroads in the nineteenth and early twentieth centuries created what is now to be Liberty State Park, Jersey City on top of the former bay.

The Morris Canal Basin is defined on the north by Paulus Hook and some filling west of Paulus Hook. Pier G stands opposite Warren Street in the Paulus Hook area. This southern edge of Paulus Hook was dominated by the Morris Canal after its completion to Jersey City in 1838.

B. THE MORRIS CANAL BASIN

The construction of the Little Basin, by which the Morris Canal drained into the Hudson, was begun in late 1835. It was enlarged between 1855 and 1859. Construction of a new, larger basin was begun to the south in 1859 and continued into 1861. Logs, rafts, and canal boats from various other canals were stored in the Big Basin. In 1863 the canal company extended the southern side of the Big Basin to the west.

The Central Railroad of New Jersey built its terminal in Jersey City in 1864 by filling the Communipaw Bay just south of the Big Basin. This construction followed legal battles between the railroad and the canal companies over land rights. The settlement of the disputes by the courts and state legislature in 1867 allowed the coexistence of both entities in the South (Communipaw) Cove. The canal company had to maintain a 150-foot wide gap in both the east and west bulkheads of the basin, which was to remain open to all public vessels. From this time until 1889, the Morris Canal and Banking Company (and, after 1871, its leasee, the Lehigh Valley Railroad Company) paid \$25,000 annually to the state for use of the basin. In 1899 the Lehigh Valley received complete title to the Big Basin, which then passed completely from canal to railroad use.

C. THE LEHIGH VALLEY RAILROAD FREIGHT TERMINUS

The Lehigh Valley Railroad, incorporated c. 1855, shipped anthracite coal from Pennsylvania over the Central Railroad of New

Jersey's tracks at Phillipsburg to tidewater at Jersey City. In 1871 the Lehigh assumed a long-term lease on the Morris Canal. From 1872 to 1876, the Lehigh completed a new tidewater route by double-tracking its Easton to Perth Amboy line. By 1880 the Lehigh Valley was a major competitor in the coal trade business (Cunningham 1961: 26-27).

In 1888 the Lehigh Valley began construction of its freight terminal on the south side of the Big Basin in Jersey City. Lacking any trackage to this site, the Lehigh freight trains left the main line at Roselle, New Jersey and joined the Jersey Central to Jersey City (*The Railroad Gazette* 1891: 610). Crossing Johnston Avenue near the west end of the basin, local and westbound freight split to the north and eastbound freight spilled into the large yard paralleling the basin in an east-west fashion. An illustration accompanying *The Railroad Gazette* of September 4, 1891 shows the development of the Lehigh freight terminus. To maintain a navigable right-of-way within the basin and to maximize its pier frontage, the Lehigh engineers designed the piers on a 30-degree angle.

There were seven piers in all. Pier A, closest to the Hudson at the eastern end of the basin, was an open pier. Piers B and C were single-story covered piers with tracks running within and along their southeastern sides. Pier D was also an open pier. Opposite Washington Street was a square-shaped pier on which stood support buildings, such as the engineer's office and bunkhouse. Piers G and H were two-story covered piers located west of this Washington Street

pier. Transfer bridges were placed at the eastern end of the yard for floating lighterage across the bay on car floats. At the western extreme, near the old mouth of Mill (Prior's) Creek and where a projected Jersey Avenue was to cross the basin and link up with Johnston Avenue (although it seems it never did), were located numerous support structures and industries, including an icehouse, a brick yard, and cement houses. A stockyard is also shown at the southwestern corner of the basin.

Engineer Walter G. Berg, Chief Engineer for the Lehigh Valley at the time of this development, was well known in the railroad world for his reference book entitled *Buildings and Structures of American Railroads*, which first appeared in 1892 and had subsequent printings. Berg described, specified, and illustrated buildings and structures of various American companies. Inasmuch as Berg designed many of the Lehigh Valley Railroad building projects, including some on the Big Basin in Jersey City, he utilized many of those designs in his book. Single-story covered freight piers B and C, double-story covered freight piers G and H, a two-story bunkhouse, a 2,000-ton icehouse, and the yard signal tower were all illustrated in this work and noted accordingly. The significance of those design drawings and specifications as they relate to Pier G, are discussed below.

Throughout its early construction at this terminus site, the Lehigh Valley demonstrated a strong preference for heavy-timber construction techniques to span their covered sheds. Lightweight timber framing was also employed on the smaller structures, such as the

bunkhouse, signal tower, and icehouse. The piers were sheathed with corrugated iron siding and tin roofs, a token attention to fire safety that was justified by a 1909 fire. On March 19, 1909 a fire broke out on Pier B and spread to Pier C. All of the shed structure on Pier B was destroyed, as was the river end of Pier C. The Lehigh Valley estimated the building loss at from \$80,000 to \$100,000 and the freight loss at \$50,000 (*Railway Age Gazette* 1909: 715). Rebuilt, both were more recently destroyed in separate fires. The last time it burned, Pier B was spanned by steel trusses crossing three structural bays measuring 85 by 33 by 25 feet. Pier C remained of heavy-timber truss construction, similar to the way it was illustrated in Berg's book.

D. DECLINE

The Lehigh Valley Railroad yard expanded throughout the early twentieth century. A large concrete coal hopper was built along Johnston Avenue to transfer coal from coal cars to trucks. Additional piers were added west of Pier H, which had actually been built as a narrow open pier of concrete. However, just as the Morris Canal had succumbed to the railroads, by the 1950s the railroads were losing their freight trade to the trucking companies. The Lehigh Valley was eventually absorbed by the Penn Central, and the freight terminus was half-abandoned in the 1960s. By the late 1970s, the facilities were in the advanced state of deterioration typical of much of Jersey City's waterfront.

Demolition of Pier G began in August of 1979. The well-constructed pier had to be picked apart piece by piece as the contractor piled steel and timber members into categorical mounds. The work proceeded slowly. Then, on Saturday, September 1, Pier G burned in a four-alarm blaze labeled by fire officials as "suspicious" (*The Jersey Journal*, Sept. 5, 1979: 2).

IV. PIER G

A. SIGNIFICANCE

- It will prove better to follow, as a rule, well-established styles as precedents, applying principles modified to suit each individual case, in preference to attempting to produce something absolutely new and unique, which generally results in presenting for the edification of the inartistic public a kaleidoscopic conglomeration of architectural odds and ends from different climes and centuries. (Walter G. Berg—Droege 1914)

In *Buildings and Structures of American Railroads*, Walter G. Berg described Pier G as "mainly intended for east bound freight for which a certain amount of storage has to be provided" (Berg 1892: 229). With a railroad track down the center of the pier, the trains could be unloaded directly onto awaiting ships or barges via the gangway bridges, or their cargo could be held in storage on the upper floor(s). Freight was apparently moved vertically by means of the Ruddell Barrel and Freight Elevator, also illustrated by Berg. This circulation method was superceded c. 1936 when the Lehigh Valley inserted three vehicular "Ramps for Tractor and Trailer Operation, Piers 'G' and 'I'" (see Lehigh Valley Railroad drawings, Office of the Chief Engineer, dated December 6, 1935 and revised May 4 and 12, 1936).

Berg described Pier G as a "double-story terminal freight shed ... designed and built in 1891 under the direction of the author, assisted by Mr. Julius G. Hocke, Assistant Engineer, L.V.R.R., and by

Mr. E.D.B. Brown." By May of 1912, as evidenced by the *Map Showing Tidewater Terminals of the Morris Canal & Banking Co. and the Lehigh Valley R.R. Co. of N.J., Jersey City, N.J.*, compiled from Records and Surveys by the Engineering Department of the State Board of Assessors, Trenton, N.J., Pier G had become "three stories". No historical photographs or maps show Pier G as a two-story structure except for the overall plan of the Lehigh Valley Freight Terminus, 1891, which appears more preliminary than actual. A third story could have been added later.

The Lehigh Valley experienced a fire in 1909 which destroyed the single-story freight shed at Pier B and a portion of the adjacent Pier C (*Railway Age Gazette* 1909: 715). These were located east of Pier G, which was evidently not damaged. However, perhaps owing to the loss of space on Piers B and C, Pier G may have been rebuilt to three stories at this time.

The 1891 plan accompanying *The Railroad Gazette* article identifies both piers G and H as two-story covered freight piers. Pier H was never built in this manner. Pier I, a three-story pier identical to Pier G, was indicated on the 1912 map previously cited. Two historical photographs show two views looking west into the large basin at Piers G and I. These date from Morris Canal investigation committees of 1903 and 1912. Pier H, as executed, was a narrow open pier of concrete with a single railroad track running down its center (since demolished). Pier I,

Pier G's identical twin, was demolished before 1979. This discrepancy between the 1891 plan for the Lehigh Valley Freight Terminus and the actual executed plan seems to indicate that the 1891 plan was schematic or preliminary in nature.

At the turn of the century, the railroads were building their tidewater freight facilities in the modern materials of steel and reinforced concrete. Always concerned with fire safety, the railroads were innovative in their incorporation of these new materials into their buildings and structures. However, covered freight piers constructed in wood were not unusual along the tidewater terminals of the Hudson River. For example, the Pennsylvania Railroad in Jersey City and the Erie Railroad in Weehawken were built in wood sheathed with corrugated metal siding.

Fire has claimed most of these covered freight sheds in Hudson County. In 1976 Weehawken lost two such piers. In 1977 Pier B at the Lehigh Valley Terminus in Jersey City burned one last time. Pier G was probably the last totally heavy wood timber multistoried covered pier surviving in Jersey City and Hudson County. This type of structural system yielded shortly thereafter to one of steel and reinforced concrete. Piers of this later, more modern type were typified by the Jersey Central's covered Piers 11 and 14 (now demolished). In these structures, steel trusses spanned the transverse direction, and a concrete floor added more fire protection. Corrugated iron siding was also utilized on these 1912 structures (*Railway Age Gazette* 1913: 1023).

Pier G's multistoried nature necessitated a technological throwback to the techniques of braced heavy-timber construction. Upper floors of freight piers were usually of wood, but almost always in combination with iron or steel, such as the Grand Street Pier of the Pennsylvania Railroad in Jersey City. Most covered freight piers erected by American railroads, and especially those along the Hudson River and New York Bay, were two stories high. Pier G was something of an anomaly, with its three stories and heavy-timber construction. It was a significant work in this respect to Jersey City's railroad/industrial past.

B. ARCHITECTURAL DESCRIPTION

As a three-story covered freight pier, Pier G was a modified parallelogram in plan/form, the modification consisting in the fact that two corners of the parallelogram were clipped off, forming two more small parallel sides at opposite ends. The longitudinal axis of the plan ran approximately southwest (at the bulkhead) to northeast (seaward end). The axis of the parallelogram plan/form was at a 30-degree angle to the bulkhead of the south side of the Morris Canal Tidewater Basin. The pier structure ran 585 feet into the water, and in cross section it measured 130 feet.

The pier's substructure consisted in round wooden piles driven in transverse rows. Piles within these rows were spaced 9 feet apart, and the rows were braced diagonally with 4 X 12s.

Each row carried a 12 X 12 cap, which received the first-floor beams; these beams spanned in 18 feet 3 inch (on center) increments. The floor decking was of butted 3 X 10s spiked to the beams below.

First-floor columns were pairs of 12 X 12s butted together but sharing common base shoes and cushion capitals. Each column stood approximately 14 feet 8 inches high with base and cap. The columns were grouped 11 feet 6 inches on center in transverse rows; the rows were spaced 18 feet 3 inches on center. Chamfered capital blocks received the 12 X 12 beams spanning in the transverse direction; 6 X 12 bracing was let into the columns and through bolted. The bracing was separated on the underside of the beams by 4 X 12 spacers, which were fixed in place by the butt joints to the bracing at both ends. Second-floor columns aligned vertically above the centers of the first-floor columns and sat directly on the beams supported by the first-floor columns. Those beams also received the second-floor joists of 3 X 14s spaced approximately 18 to 20 inches on center.

This system is typical of the first floor. A center track well, sunk 4 feet below the first floor, ran longitudinally, or southwest to northeast. It was approximately 22 feet wide and ran almost the entire length of the covered shed. The cross section of the structure shows 4 bays of wooden post and braced beam construction on either side of the center track well bay, which was a clear span of approximately 35 feet 6 inches center-to-center. In this center bay, construction changed from wood to steel; 12 X 12-inch lattice-braced

steel columns carried a riveted steel plate girder of 36-inch depth. Three bays of the second floor span were carried on top of this steel system. A triangular steel bearing bracket attached to the sides of the steel columns received the girder. These brackets were located at the same spots on the steel columns as were the bracings on the wooden uprights.

The second-floor system was organized in similar bay dimensions as was the first floor, except for the absence of a track well down the center. Corridors of circulation existed on diagonals and from front to back. Single 12 X 12s served as columns, standing approximately 8 feet 10 inches high without bases or capitals. The bracing and spacing were achieved with the same 6 X 12s and 4 X 12s as were used on the first floor. Beams measuring 12 X 12 inches carried the 3 X 14 joists and the columns of the third floor.

The third-floor roof structure became lighter in treatment. A monitor roof 36 feet wide and 6 feet high above the main roof ran down the center of the shed, creating a clear 22-foot height from the center floor to the ridge rafter. The monitor width corresponded to the three center bays of the second floor and to the steel-spanned track well on the first floor. The four side bays were of 8 X 8-inch columns, except at the side wall which was 12 X 12. The spacing arrangement was similar to those of the floors below. The columns were taller toward the monitor at the center, carrying a slanted 12 X 8 beam, which dictated a shed roof sloped away from the monitor. The

columns were braced by pairs of horizontal 2 X 10s through bolted to the columns and stopping at the column row that received the monitor on either side. The 12 X 8 beam carried 2 X 10 roof joists spaced approximately 30 inches on center. Roofing boards ran with the slope of the roof.

The monitor roof was raised on two longitudinal beams, which were supported by two rows of approximately 21-foot high 8 X 8 columns. These columns were braced by two horizontal ranges of paired 2 X 10s bolted to the columns. They were located at the top and bottom of the clerestory walls of the monitor. Diagonal bracing of single members ran from the longitudinal beams in the monitor to below the clerestory wall and was bolted to the shorter columns, which received the clerestory above. The clerestory windows were of fixed 16-light sash. Cylindrical metal drums spaced along the ridge line of the monitor provided exhaust vents.

None of the Ruddell Barrell Freight Elevators as described by Berg in *Buildings and Structures of American Railroads* was extant at the time of demolition. Vertical circulation was enhanced c. 1936 when the Lehigh Valley added three ramps to pier G for "tractor and trailer operation." Drawings dated December 6, 1935 and revised May 4, 1936 and May 12, 1936 show ramps "A," "B," and "C." Ramps A and B were located along the southeastern side of the pier on the first-to-second and second-to-third floors, respectively. Both were straight runs, but ramp A was longer owing to the height of the first floor. Ramp C

was situated along the northwestern side of the structure, running to the second floor on that side and then breaking at a right angle over the track well at the center of the first floor. This location was near the beginning point of ramp B to the third floor. Ramps A and C were thus on opposite sides of the pier, both going to the second floor. Reaching the second floor on ramp A, one doubled back on top of that ramp to get to ramp B. Reaching the second floor on ramp C, one was five transverse bays away from ramp B to the third floor owing to ramp C's switchback over the track well. Of particular note on ramp C was its spiral as it turned 90 degrees at the first floor and again over the track well, approximately one-third of the way up.

Stairs were located in the corner of the southern and southeastern sides from the first to second floor and along the southeastern side from the second to third floors. Various gangway bridges were located on the northwestern side of the first floor. The levels could be varied to the barge height by a chain-pulley system. Operable doors slid aside on overhead tracks.

Externally, studs spaced 24 inches on center provided nailing surface for 24-inch wide corrugated siding in 6- and 8-foot lengths. A simple ryma recta cornice set above a fascia band crowned the wall-roof joint. Windows at the first and second floors were of fixed side-by-side sash of six panes each. These were of wood and had simple wooden bands as a rectangular frame. Windows were spaced

within the 18-foot 3-inch span of the internal structural bays.

At the southern side of the pier along the bulkhead, the entry portal was articulated with an entablature of parallel cornice moldings separated by a broad plain fascia, which corresponded to the steel plate girder internally. This entablature was received by pilaster strips corresponding to the steel lattice-braced columns on the inside. Two large hoisting bay openings on the second and third floors at the western end of this facade caused the supergraphics identifying the structure to be off-centered to the east end, thus reading "LEHIGH^G VALLEY." This legend was painted in white letters directly on the corrugated siding.

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